

321 CONTACT™

Inside: A Bloodhound Gang Mystery!



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BLOODHOUND
DETECTIVE
AGENCY

The Gang's All Here!

Now you can join the Bloodhound Gang as they solve new cases in each issue of Contact Magazine. This month's story is the first part of an exciting three-part adventure. It begins at the space center in Houston, Texas. Vikki, Ricardo and Zack think they are on vacation. But they're in for a big surprise. To find out why, turn to page 14.



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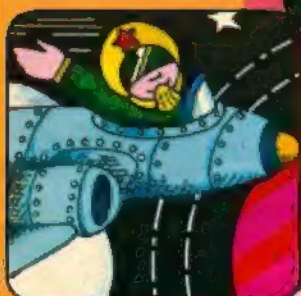
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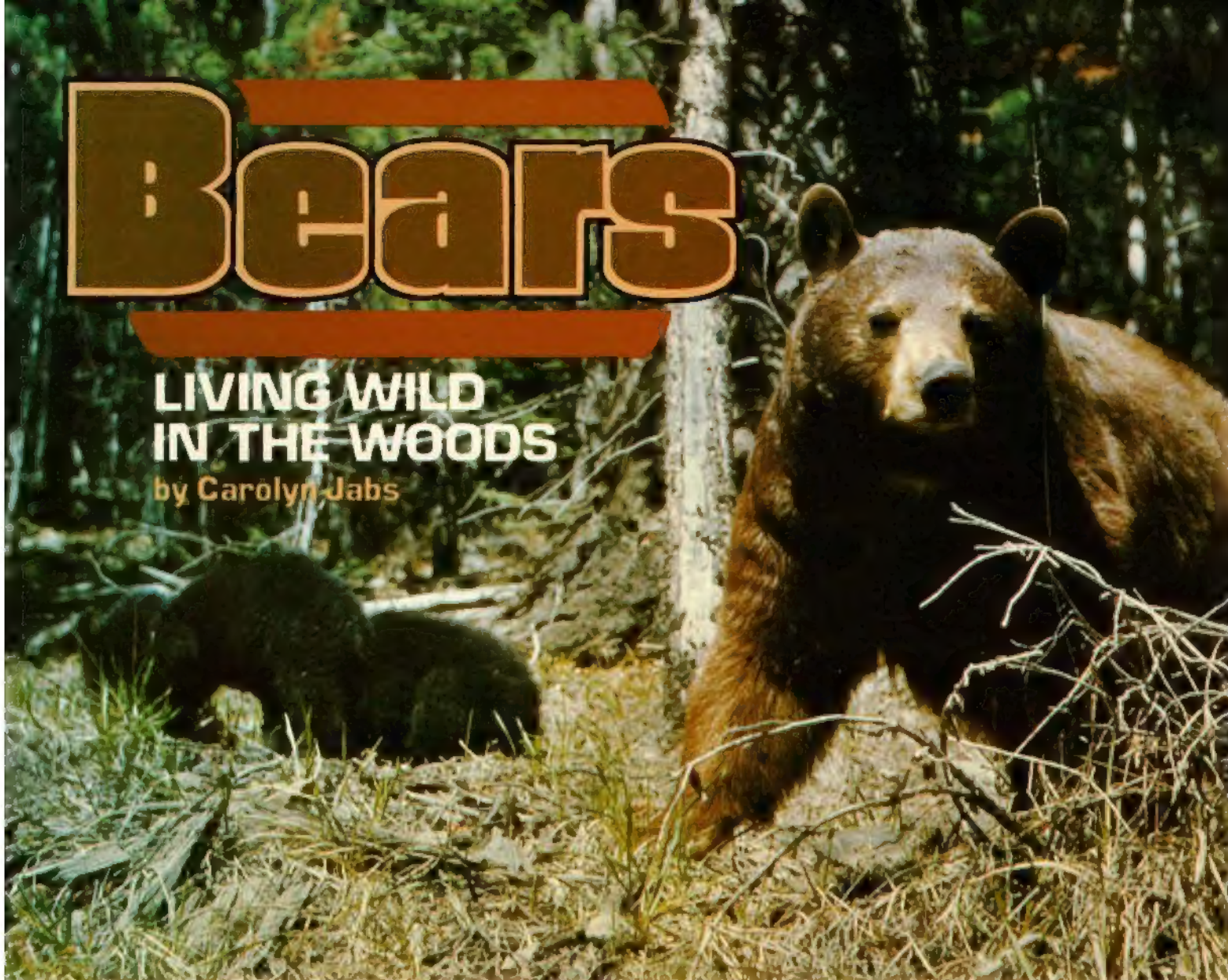
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Bears

LIVING WILD IN THE WOODS

by Carolyn Jabs



The baby black bear awoke with his nose tingling. Outside, the ground was white with frost. He licked his nose. It felt cold and wet. But the rest of his body was warm. His mother's body curved around him and his brother and sister, keeping them cozy.

Suddenly, all the bears woke up. The three cubs kicked and shook themselves. Then they tumbled out of their den under the dead log. Their mother followed. The whole family went looking for food.

Luckily, to a bear, almost anything tastes good. One little bear caught a mouse and ate it. Another looked through the yellow oak leaves for acorns. Mother bear found a special treat to eat. It was an anthill which she scooped up with her big paw. Then she licked off the ants that ran down her arm.

What she would have liked even better was to find a beehive because bears love honey. She can tear up a hive and steal the honey because her thick fur protects her from bee stings.

Above: Bear cubs learn lessons from mother bear about how to live safely and avoid enemies in the woods.

Soon the little bears began to play. They nipped at each other and turned flips on the grass. But their mother didn't join their games. She was watching for danger, as all mother bears must do. It is her job to protect the cubs. The baby bears' father lives by himself in another part of the forest.

Danger!

Suddenly mother bear sniffed the air. Her keen sense of smell warned her of trouble. A hunter was walking through the forest! She grunted a fast warning and the cubs scurried up a tree to safety. But one little bear didn't move fast enough. He got a warning swat from mother bear's paw. Then they all waited quietly up in the branches of the tree.

At last the hunter moved on without seeing the

bear family. Finally, the mother bear let the little ones come down. They showed that they had learned what to do when danger appeared.

The little bear has learned a lot and grown a lot since he was born in the early spring. At birth, he was the size of a squirrel. He weighed less than one pound. Since he had no fur, he was a bare little bear. His eyes were closed at first. For six weeks, he did nothing but drink milk from his mother. When his eyes opened, he realized he had a brother and sister.

Even though they are all called black bears, his brother is brown and his sister is black with white marks. People named these bears before they knew they were found in many colors. A few black bears are gray or even white!

This bear family is lucky. Since they live in the mountains, they don't often see people. But in other places, people and bears sometimes get in each other's way. The problem starts when people cut down the forests where bears live. Then the bears can't find enough to eat, so they start eating people's food. Some steal food from campers. A few go to local garbage dumps every night for dinner.

Many people even like to feed bears because they look funny. They sit up on their hind legs and make slurping noises. Bears really love to eat.

There's just one problem. Some bears get used to eating food from people. Then they get mad if there isn't enough to eat. Just imagine a 300-pound bear in a bad mood! Some hungry bears have scratched people with their long sharp claws. A few have ➡



Above: This baby black bear loves to eat honey. But if he eats too much, he will get cavities in his teeth.



Left: Bears can swim well. Especially good at swimming are polar bears which live at the North Pole.

Right: This black bear will soon be ready to hibernate. After finding a cozy cave or hole under a log, she will go to sleep. Her thick fur will help to keep her warm.

Below: Bears often climb trees when danger appears. Their sharp claws help them climb quickly. Sometimes a mother bear will give her cubs a swat, if they don't move fast enough when danger is near.



even killed people. That's why park rangers say, "Never feed the bears."

Getting Ready for Winter

Now the baby bear is six months old and his first winter is coming. As the weather gets colder, a bear needs extra food to keep warm. But food is hard to find when snow covers the ground. Bears solve this problem by sleeping through the winter.

The baby bear is getting ready by eating all the food he can find. Each day he gets fatter. As the weather gets cooler, his fur is growing thicker. Soon, he and his family will find a secret den where nothing will disturb them. The den might be a hollow log or a pile of branches or a cozy cave.

As the cold weather sets in, the bears will settle down for their long nap. Hibernation is like a deep sleep except that the bears won't wake up each morning. They won't have to eat or drink, either. Their bodies will use all their stored up fat to keep them from starving.

All parts of the baby bear's body will slow down so he uses less energy. His heart will beat only eight times a minute—much slower than its 40 beats a minute in summer. The baby bear will take long, deep breaths—only one every 45 seconds. Even his body temperature will be ten degrees lower than usual.

In a Bear's Den

One person this bear family may meet without ever knowing it is Dr. Lynn Rogers. He is a scientist

More Bears

Black bears aren't the only kind of bears. They have relatives around the world. For example, another black bear lives in Asia. It's called the moon bear because it has a white moon-shaped mark on its chest.

The Alaskan or Kodiak bear is the largest member of the bear family. A full grown Alaskan stands up to nine feet tall and weighs 1,700 pounds.

The grizzly is the fiercest of all bears. But it attacks people only when it must defend itself. Today, there are only about 1,000 grizzlies left in the United States.

Polar bears are white so they blend in well with snow and ice. But even though they live in the cold near the North Pole, they don't hibernate. Instead, they spend the winter catching seals, which are their favorite food.

Honey is the favorite food of the Sun bear, sometimes also called the honey bear. This is the smallest of all bears. A grown one weighs only about 60 pounds. Sun bears use their sharp curved claws for climbing trees. Then they settle into nests and spend their days sunbathing.

So the American black bear has lots of relatives all around the world. Can you imagine what a family reunion would look like?



A family of bears picks through a garbage dump. Bears love to eat people food.

who studies hibernating bears. He believes people can learn things about bears that could make space travel easier. For example, if space travelers could hibernate on their way to distant planets, they wouldn't have to take along so much food and water.

Dr. Rogers actually pokes around in bears' dens. And he never knows what he will find inside. "Sometimes the bear is awake and looking at me," he says. Bears may actually wake up and take a walk when the winter weather turns warm.

Usually the bears Dr. Rogers studies are sleeping soundly. And he's glad. Once he fell into a den by accident. "I thought I would be bitten for sure," he says, "but that bear didn't even wake up."

Dr. Rogers hopes that the study of bears may make it possible for human beings to hibernate some day. But he also wants to help people understand bears better. That way, baby bear and others like him will have a better chance of living happily ever after.

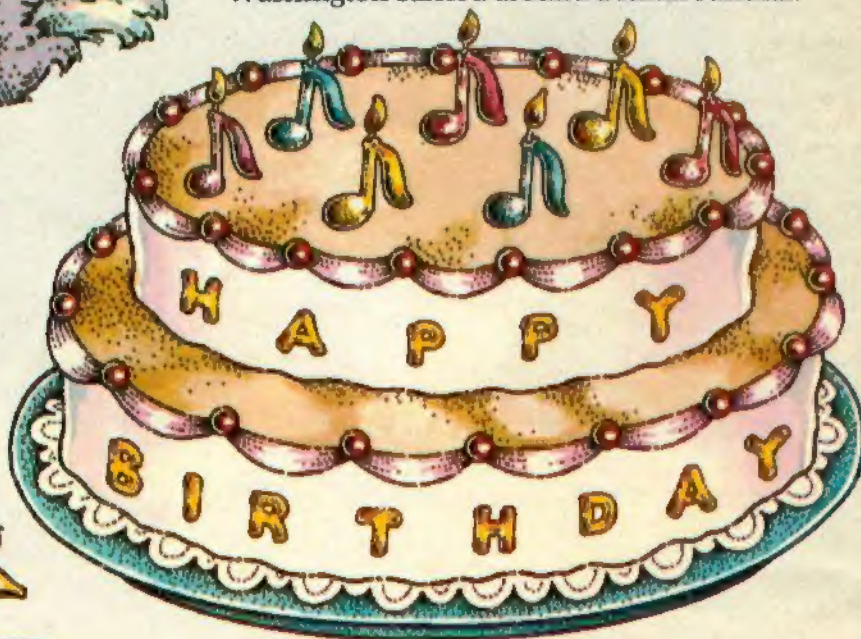
Factoids

What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.

The North African ostrich lays the world's largest egg. It weighs four pounds.



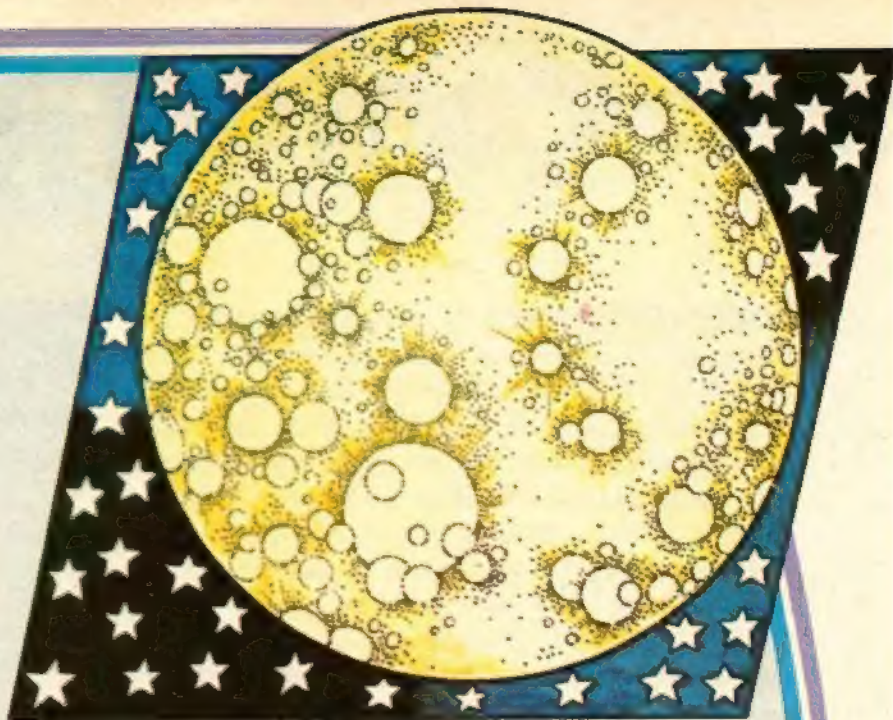
Instead of wearing a watch, George Washington carried around a small sundial.



The most frequently-sung song in the English language is "Happy Birthday."



Alaska is the largest state in the U.S., but has the smallest population.



There are over 50,000 craters covering the surface of the moon.



All cats walk only on their toes.



About one tenth of the earth's surface is covered with glaciers.

Contact Report

Ancient Drugstore If she had found a frisbee in the pyramids, scientist Debra Martin wouldn't have been more surprised. Debra was studying ancient human bones. And what she found were signs that these people had been taking a modern medicine. But this medicine has been in use for only 30 years. What was it doing in Africa 1,400 years ago?

The mystery was soon solved. A clue came from what these ancient people ate. They grew wheat and barley for food. After the harvest, their grain was stored in mud huts. And there, bacteria grew on the grain and produced the medicine.

Later, the grain was turned into bread. So whenever people ate it, they were also taking medicine—without even knowing it.

Today the same bacteria still help people to fight sickness. But now the medicine is made in modern labs instead of mud huts.

—Written by Douglas Colligan



Above: Egyptians stored grain and made medicine.



There's No Place Like Home If you were blindfolded and taken far away, could you find which way was home? Surprising as it seems, maybe you could.

At least that's what English scientist Robin Baker has found. He blindfolded some students and put them on a bus in England. Miles away, he let them off and asked, "Where's home?" Many of them came up with the right answer.

Baker wanted to find out whether people have a special sense of direction. This sense is called homing ability. It's what homing pigeons use to find their way back to their nests.

Several American scientists also tried this experiment with their students. But the results turned out different. In this country, many people could not point to home.

Does that mean people don't have a homing sense? Scientists won't know for sure until they do more tests. So for now, don't try this experiment—unless you take a homing pigeon along!

—Written by Marilyn Norris

Left: If blindfolded, could you find your way home?

Contact Report

Trickin' Chickens You may think it's easy to play a trick on a chicken. But farmers are finding that some chickens are really hard to fool.

The reason they want to trick the chicks is to get them to lay more eggs. Hens usually lay only one egg every day and a half. But farmers want them to do better. So they turn on the hen house lights every few hours. And each time the lights go on, some hens think it is the start of a new day. So they lay eggs more often.

But farmers are finding they can't fool all the chickens all the time. Some smart hens seem to figure out their trick. They lay eggs only when they feel like it. The smarter the bird, the fewer the eggs. Harold Biellier, a chicken expert, wants to breed chickens that are easy to fool. So far, his big success is a dumb cluck that laid 371 eggs in only 365 days.

—Written by Douglas Colligan



Above: Chickens are being tricked into laying extra eggs.



Above: The potato beetle is one of farmers' worst insect pests.

Dug Off! When Mount St. Helens erupted, it covered the countryside with tons of ash. This caused many problems for people living there. But some good things happened too, as farmers discovered.

What the ash did was kill thousands of potato beetles and grasshoppers. These insects gobble up potatoes and other crops.

Ash is very rough and scratchy. When insects brushed against it, the layer of wax that covers their bodies was worn away. And without that waxy cover to protect them, the bugs soon dried up.

The farmers were really glad to get rid of all those pesky grasshoppers and beetles. But they still wouldn't want the volcano to erupt too often.

—Written by Marilyn Norris

What's That? Have you seen a story in a newspaper or magazine that belongs in the *Contact Report*? Why not cut it out and send it to us? Be sure to include your name, age, address and the place you found the story. Send it to:

The Contact Report
P.O. Box 599
Ridgefield, NJ 07657

Are You An Energy Hog?

PLAY THIS GAME AND FIND OUT

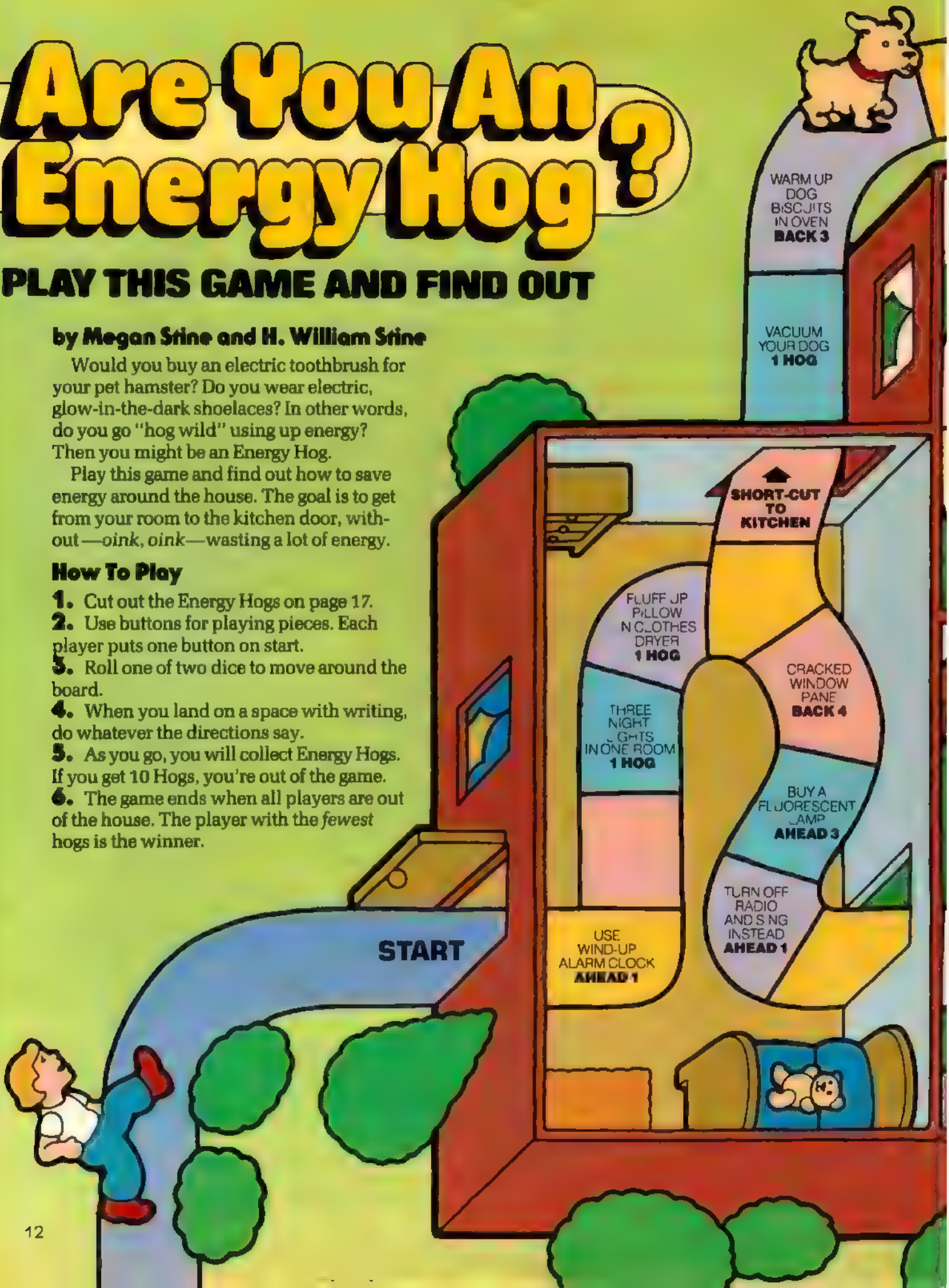
by Megan Stine and H. William Stine

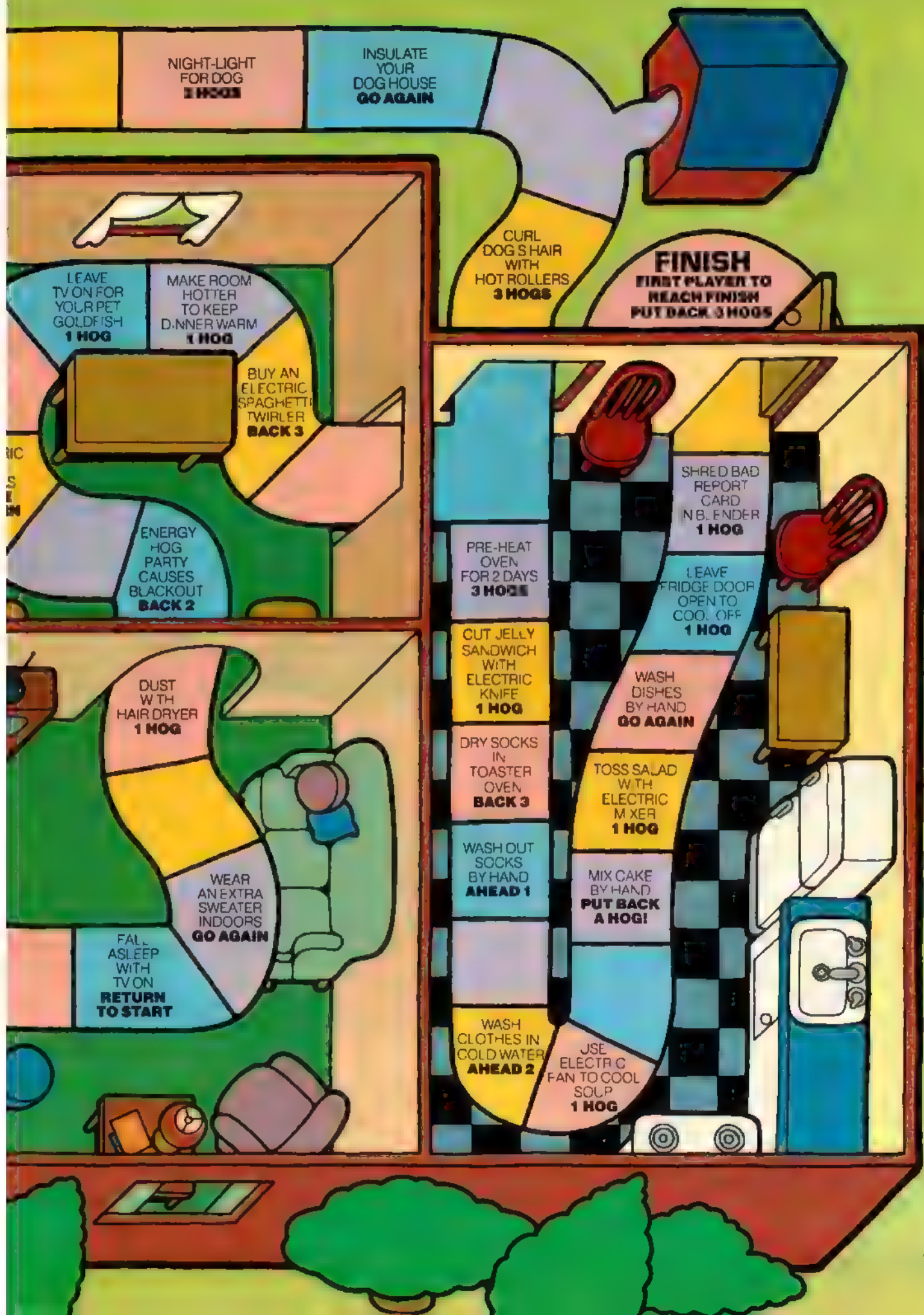
Would you buy an electric toothbrush for your pet hamster? Do you wear electric, glow-in-the-dark shoelaces? In other words, do you go "hog wild" using up energy? Then you might be an Energy Hog.

Play this game and find out how to save energy around the house. The goal is to get from your room to the kitchen door, without—oink, oink—wasting a lot of energy.

How To Play

1. Cut out the Energy Hogs on page 17.
2. Use buttons for playing pieces. Each player puts one button on start.
3. Roll one of two dice to move around the board.
4. When you land on a space with writing, do whatever the directions say.
5. As you go, you will collect Energy Hogs. If you get 10 Hogs, you're out of the game.
6. The game ends when all players are out of the house. The player with the fewest hogs is the winner.





The Bloodhound Gang™



The Case of the Golden Lining

Part One

by Madeline Sunshine

Attention detective fans! Starting this month, you can read mystery stories starring The Bloodhound Gang. Follow the new adventures of Vikki, Zack and Ricardo in 3-2-1 CONTACT Magazine. This issue contains *part one* of an exciting three-part mystery. Read *part two* next month.

Vikki, Ricardo and Zack, otherwise known as the Bloodhound Gang, were the first ones back on the tour bus.

"It's all so amazing," said Vikki. "I feel like we're right in the middle of a science fiction movie."

"Yeah," agreed Ricardo. "Launch control rooms, astronauts, rockets—it's mind boggling!"

"It is impressive," Zack said. "But I'll be even more impressed tomorrow when my experiment takes off into space."

Zack's experiment was one of many that would soon be launched into earth orbit aboard America's Space Transportation System—the Space Shuttle.

Zack was lucky to get his project in when he did. Now the shuttle was booked solid for four years.

"Excuse me," said a man seated across the aisle from the Bloodhound Gang. "Are you the young man whose experiment is being sponsored by the famous Mr. Bloodhound?"

"That's me," said Zack. "And this is the rest of the Bloodhound Gang," he added, pointing to Vikki and Ricardo.

"Yes, yes. I've heard a great deal about you," said the man. "Whenever there's trouble..."

"We're there on the double," the Gang chimed in.

"So it would seem. Well, it's a pleasure to meet you all," the man continued. "I'm Dr. Phineas Fripp—physicist at large."

"What's that supposed to mean?" asked Ricardo.

"Not much," Dr. Fripp admitted. "It just sounds better than saying I'm retired. See, until a month ago, I worked right here at the Kennedy Center. Yup!" he went on, "for 15 years this place was my life. Now I'm a visitor at the space port, same as

everyone else on this bus; just having a good time and enjoying the scenery."

"We know what you mean," said Vikki. "For the next few days, we're retired, too. No ringing telephones, no suspects and no investigations!"

Dr. Fripp smiled and went back to looking at his guidebook.

A Mysterious Photographer

"Hey," Zack whispered, after Dr. Fripp had settled back into his seat. "There's something fishy about the guy sitting next to Dr. Fripp."

"What are you talking about?" asked Vikki.

"Didn't you see?" replied Zack. "He just pulled out a tiny camera and took a bunch of pictures."

"So what?" said Ricardo. "Everyone's taking pictures. We're on a tour."

"But this guy wasn't taking pictures of scenery," Zack insisted. "He was taking pictures of people on the bus."

"Oh, come on," said Vikki. "Stop imagining villains. We're not even on a case."

"Yeah," said Ricardo. "This is our first trip to the Kennedy Space Center. Let's just enjoy it."

"It's my first trip, too," offered a meek-looking man sitting in front of them. "I'm Jason Jennings," he told the group. "And I just want to say that I'm enjoying this tour immensely."

"What's there to enjoy?" said the woman sitting next to Jennings. "It's a waste, a great big waste!"

"Then why are you here?" Vikki wanted to know.

"I've got no choice," complained the woman. "I'm a newspaper reporter. But I'll tell you, if I had my way they'd scrap this whole program."

Before anyone could comment further, the bus jerked to a halt.

"If you'll follow me," called the tour guide, "we'll proceed to the Space Museum."

Everyone got up and began to file out of the bus.

"Look!" Zack whispered to Vikki and Ricardo. "That guy sitting near Fripp just took the reporter's picture, too. I'm telling you, something's up!"

"Step right in, folks," the tour guide invited.

"Our museum program is about to begin."

Inside the Museum

Vikki, Ricardo and Zack followed Jason Jennings, the man who had been sitting in front of them, into

the museum.

"Did you see that?" Ricardo asked, as they walked past a line-up of white-suited maintenance workers. "That man, Mr. Jennings, just waved and signalled to one of the workers."

"So?" said Vikki.

"So, he said he'd never been here before," Ricardo explained.

"And," Zack jumped in, "if he's never been here before, how does he know that cargo worker?"

"You know," Vikki said to Zack, "You might have been right all along. Maybe something strange is going on around here. We'd better keep our eyes open."

"This way, ladies and gentlemen," said the tour guide. "Please follow me to the Exhibit Hall."

The museum's Exhibit Hall displayed some of the actual equipment used in space flight.

"On table #1, you'll notice an astronaut's helmet and visor," said the tour guide. "Some of you jewelry lovers might be interested to know that the visor is lined with a thin coating of pure gold. Nothing but the best for our astronauts."

A young woman raised her hand. "Why do they use gold?" she asked.

Dr. Fripp Explains

"I'd be glad to explain," Dr. Fripp offered. "That is, if you don't mind," he said to the tour guide.

"Of course not, Dr. Fripp. Please go ahead."

"You see, the gold acts as a shield," the doctor began. "Gold is indestructible. It will never rust or corrode like other metals."

"Right you are," said the tour guide. "And as a matter of fact, in a little while you'll all have a chance to see just how indestructible gold is. In twenty minutes we'll be heading over to the Astronaut Training Building where an actual space suit and helmet are being tested under the same kind of conditions found in space." With that, she began to lead the group toward the next exhibit.

"Zack! Ricardo! Quick, look over there!" Vikki whispered. "The photographer—the one Zack spotted before—well, he's pretending to read his guidebook, but his camera is clicking away."

"I noticed him, too," Ricardo whispered back. "And his camera is focused right on that man—Mr. Jennings."

"Forget the photographer," said Zack. "It's Jennings we should be checking out now."

See the way he's handling that visor? He's looking for something. I know it!"

"Yeah," said Vikki. "You're right. And he's smiling. He must have found whatever it is."

"Uh-uh," said Ricardo. "See? There's nothing in his hand."

"I don't get it," said Zack. "Unless . . . maybe he put something in the helmet. Maybe he's a spy."

"Maybe he and the photographer are both spies," Vikki put in. "Let's get a closer look at that space helmet."

A Clue

Zack walked over to the table that held the helmet. A bright floodlight was shining down on it. The boy ran his hand along the outside of the helmet and visor . . . Nothing was there. Then he put his hand inside and explored the inner surface.

"There's nothing in here," he said to the others. But then, all of a sudden, his face lit up like a light bulb. "Here, put your hands on the outside of the visor," Zack urged. "Do you feel how warm it is?"

"Of course it's warm," said Vikki. "There's a huge floodlight shining down on it."

"Right," said Zack. "Now put your hands on the inside of the visor."

"Hmmm," said Ricardo. "The inside feels just as warm as the outside . . . Maybe even warmer."

"Exactly my point!" Zack exclaimed triumphantly. "Don't you remember what Dr. Fripp said? Gold is supposed to act as a shield against light rays. That means the inside of this visor should be cooler than the outside. But it's not. Heat is getting trapped inside. There must be something wrong with the visor."

"Maybe it's just a display model," suggested Ricardo.

"I don't know," said Vikki. "Everything else here seems to be real."

"Look, why don't we ask Dr. Fripp," said Ricardo. "He might know."

A Visor Is Missing

The three young detectives walked over to the doctor and described what they had discovered.

"Ah-ha!" said Fripp, as he examined the space helmet. "It's the visor. The helmet itself is fine, but someone has removed the real visor and has substituted a mere toy. This is nothing but a cheap,

gold-tinted plastic."

"You mean it wouldn't protect an astronaut against infrared and ultraviolet rays?" said Ricardo.

"Not at all," said Dr. Fripp. "As a matter of fact, if astronauts wore this kind of visor in space, their eyes could be damaged. They could even go blind."

"Oh no!" cried Zack. "The tour guide said an astronaut was going to be testing a space helmet just like this one in a little while."

"So?" said Ricardo. "Just because this one has a toy visor doesn't mean the one they're testing is a toy, too."

"But it might be," said Vikki. "How can we take the chance?"

"We can't!" Dr. Fripp shouted. "Come with me."

He and the Bloodhound Gang ran over to a security guard at the front desk of the museum. "You've got to get us through to the Astronaut Training Building right away!" he cried.

"I can't, Dr. Fripp," said the security guard. "We've been having problems with those phone lines all day. Why don't you walk over? It'll only take a few minutes."

"You don't understand," said Ricardo. "This is an emergency! We've got to stop a test from going on. The tour guide said it would be starting in twenty minutes. And," he added, looking at his watch, "that was almost twenty minutes ago!"

Will the Bloodhound Gang be able to stop the test in time?

To find out, read part two of "The Case of the Golden Lining" in next month's issue of 3-2-1 CONTACT.



Pig Puzzle

How many different words about pigs can you make from the letters here? You can use the same letter more than once. Can you find at least ten?



Energy Hogs

Cut out these energy hog pieces. Use them with the game on page 12.

Answers on page 37.

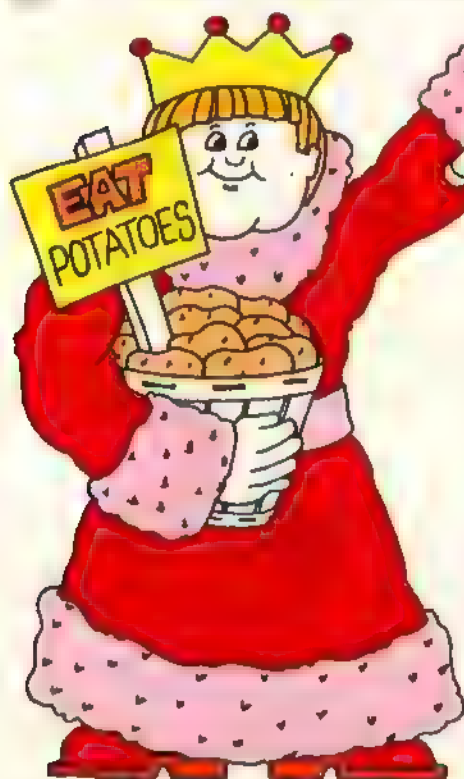


List of the Month

Pass the Salt

by Joanna Martin

Want a few funny facts about food?
Try and sink your teeth into these:



King Potato Head Today almost everyone eats potatoes. But long ago, most folks wouldn't touch them. Potatoes grow underground. People thought food that grew this way seemed weird.

Then a German king decided people should eat potatoes. If they didn't they might starve. "Eat potatoes," the king said, "or your noses and ears will be cut off." Before very long, everyone was really digging potatoes.



Look But Don't Eat? Tomatoes weren't always popular. When Spanish explorers in South America first found them, they thought tomatoes were poisonous. But the explorers took a few home because they were so pretty. Soon tomato plants became popular in Europe, but only as decorations for homes.

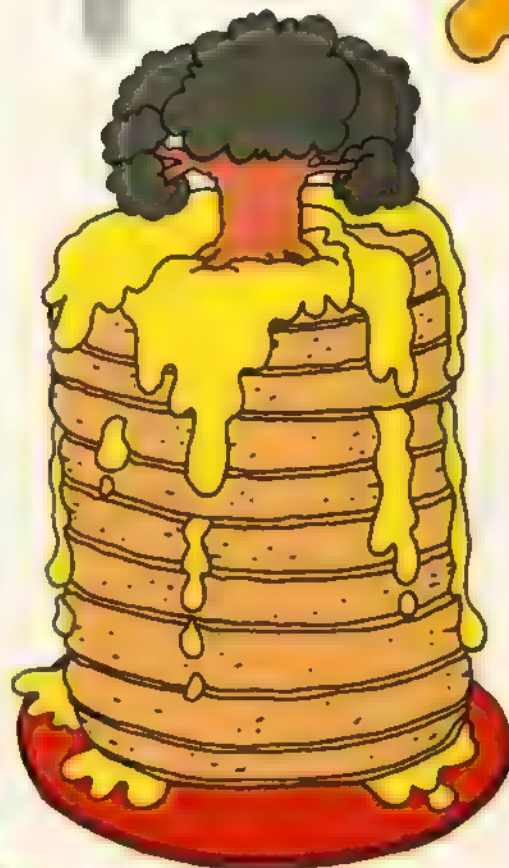
One of the first tomato eaters on record was Thomas Jefferson. When he didn't get sick, others tried them, too.

Sloppy Eater? If you have pork for dinner, it's usually ham or pork chops. But a famous poet often had a pig for dinner—as a guest! Robert Herrick liked his pet pig so much that he taught it to sit at the dinner table with him. The animal drank from a large cup. But no one knows whether Herrick's pet also ate like a pig.

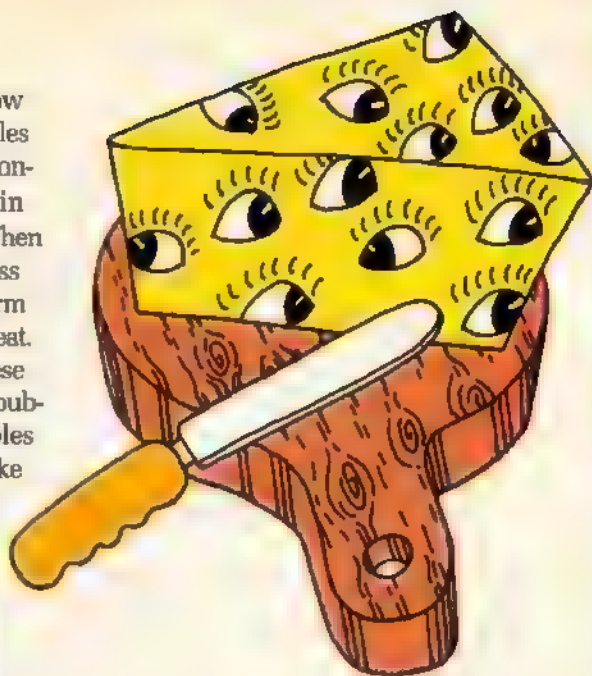




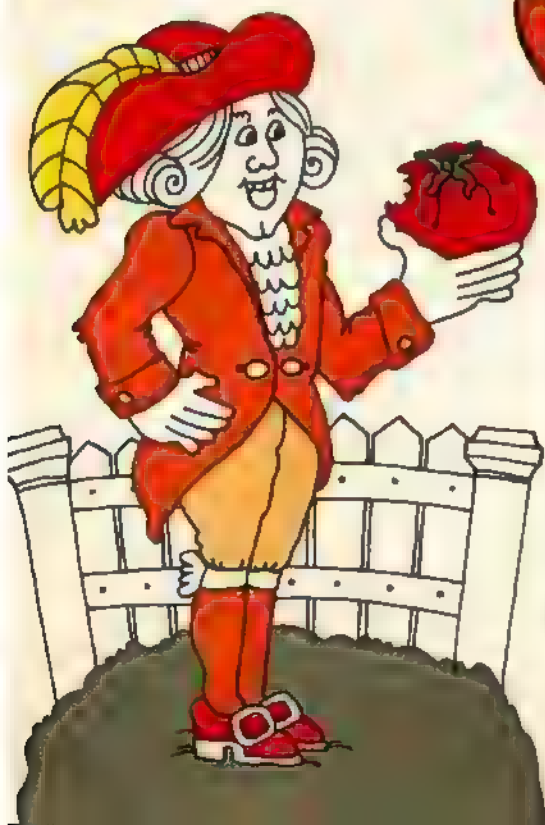
Beer and Steers Beef comes from steers—cattle grown for eating. In Japan, steers are raised with great care. Instead of eating grain, they are fed beans and rice. They also get a rubdown each day. And that's not all! These animals don't have to drink plain water. They're actually given beer to fatten them up. Japanese steers lead a happy life—right up until they become juicy roast beef!



The Hole Truth You know that Swiss cheese has holes in it. But did you ever wonder how the holes got in there in the first place? When it's made, a piece of Swiss must be stored in a warm place until it is ready to eat. For two months the cheese ripens. Gases collect in bubbles inside. These bubbles form the "eyes" that make the cheese look so holey.



Tree Juice The sweet stuff that tastes great on pancakes is maple syrup. It gets its start as sap, the liquid that flows inside maple trees. Long ago, American Indians found this sap very tasty. So they began collecting it in pots and boiling it. After a long cooking, what was left was maple syrup. Today it is still made in the same slow way. Forty gallons of sap boils down to one gallon of maple syrup.



Blah? If you think egg salad is always just blah, read on. People in the deserts of Africa and Asia have an exciting egg recipe. First, they stuff hardboiled eggs into cooked fish. Next, they add the fish to several fat chickens. Then the chickens are stuffed into a roasted sheep. Finally, the sheep is put inside a whole roasted camel. Bet you're ready to stick with blah egg salad now!



21 CONTACT





Any Questions?

Why do dogs hear high pitched noises which people cannot hear? When someone blows a “silent” dog whistle, you don’t hear a thing. But your dog sure does. Dogs can hear certain sounds a lot better than people can.

Your dog’s ears look very different from yours. But they work the same basic way. A dog’s hearing—and yours, too—takes place in a small tube deep inside the ear. Within this tube are nerve cells. They send sound messages to the brain. A dog’s nerve cells are more sensitive than yours. They can pick up some sounds when yours can’t.

Sounds travel through the air as invisible waves. These waves move back and forth, making tiny flutters called vibrations. The faster a sound wave vibrates, the higher the sound is. The sound waves coming from the dog whistle vibrate very fast. The sound is higher than your ears can bear. But your dog’s ears can easily pick up the noise. Woof!

Question sent in by Don Petty, Garland, TX.



Does the color of your eyes affect your vision? The color part of your eye is called the iris (EYE-riss). It surrounds the black spot in the center of your eye—the pupil. Your pupil is really a hole in your eye that lets in light. The iris works with your pupil to make sure the right amount of light gets into your eye.

As long as you have normal vision, you can see just as well as anyone else. It doesn’t matter whether your eyes are brown, blue, hazel, green or violet. But the lighter your eyes are, the more sensitive they are to bright light. And the easier light can get through your iris. That’s why someone with blue eyes probably will squint in the sun a little bit more than someone with brown eyes.

There’s no way you can change the color of your iris to make it keep more light out. But you can always try sunglasses!

Question sent in by Helen Shaughnessy, Needham, MA.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

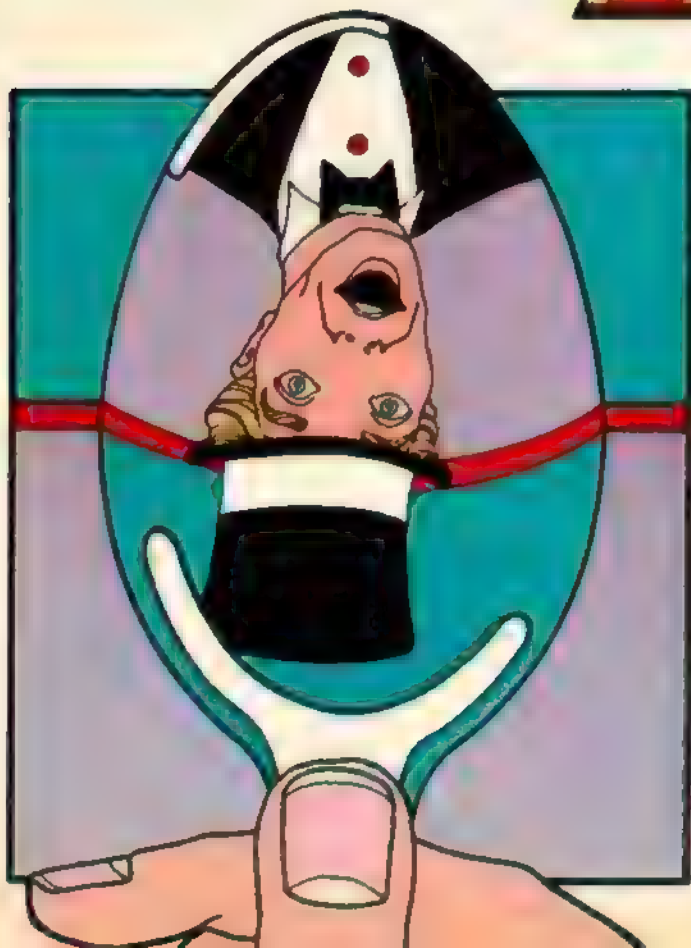
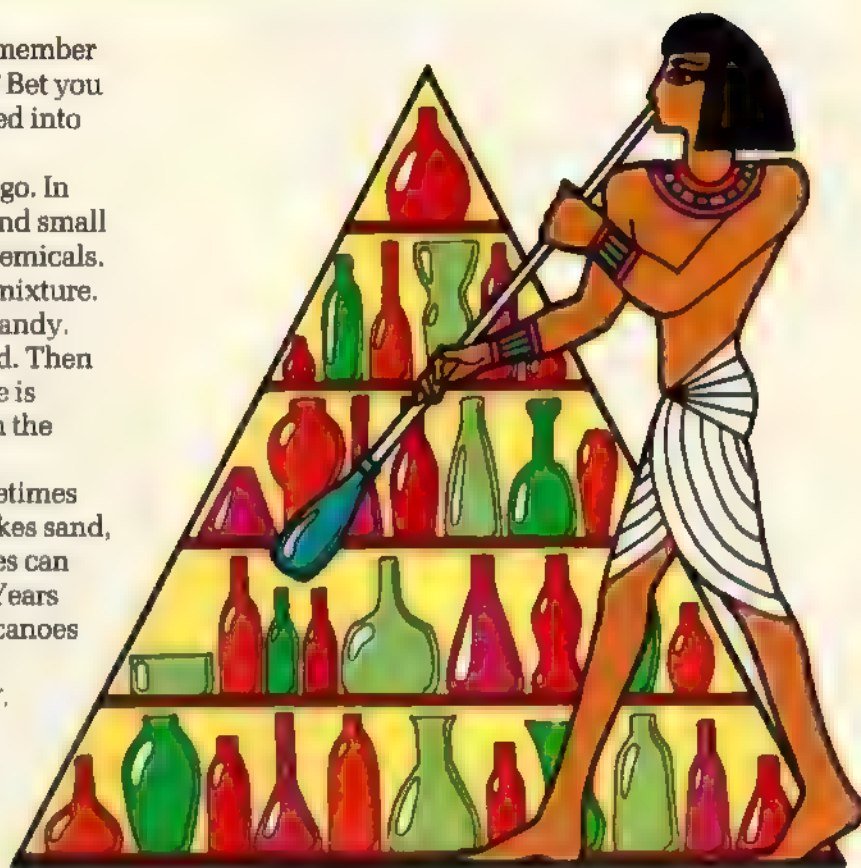
What is glass made of? Remember the sand you saw at the beach last summer? Bet you didn't know that the gritty stuff can be turned into sparkling glass!

Glass was first made thousands of years ago. In Egypt, people began making glass jewelry and small bottles. They used a mixture of sand and chemicals. Most of today's glass comes from the same mixture.

Making glass is a little like making hard candy. First, the sand, like sugar in candy, is melted. Then the other chemicals are added. This mixture is heated until it is very hot and syrupy. When the syrup cools, it becomes glass.

People aren't the only glass makers. Sometimes nature gets into the act. When lightning strikes sand, it can create long, thin glass tubes. Volcanoes can also form glass by melting sand and rocks. Years ago, California Indians used glass from volcanoes to make arrowheads, knives and jewelry.

Question sent in by Lincoln Palsgrove, New York, NY.



When you look into a spoon, why are you upside down? Look

into a mirror and what do you see? A charming, good-looking kid. Look into a shiny spoon and what do you see? A charming, good-looking, upside-down kid!

When you look at a flat mirror, you see a *reflection*. Light bounces off you and onto the mirror. Then it bounces back into your eyes. Nerves in your eyes send messages to your brain. That's how you understand what you are seeing. Simple, right?

Not always. If you have ever looked into a fun house mirror, you know your eyes can sometimes play tricks on you.

A spoon is curved, and light bounces off curved things in a special way. In this case, the light from your reflection enters your eyes upside down. The message that is sent to your brain makes you see yourself upside down. Like magic, you look as if you are standing on your head.

Question sent in by Maryam Haddad, Salem, NH.

UNDERGROUND

DISCOVERING THE WORLD OF CAVES

by Celeste A. Koon

Treva Gardner and her husband Gene are searching for a cave. All morning they have climbed steep hillsides. According to their map, the cave should be nearby. But where? Just then Treva climbs around some rocks. "I see it!" she shouts.

Across the valley in a rocky wall, there is a hole the size of a trailer truck. For thousands of years, a cave has been hidden there. Probably only one or two Indians and a few modern explorers have ever gone inside. And no one has written down what this cave is like.

Are there beautiful rock formations inside? Rare cave fish? Ancient Indian bones? That's what the Gardners have come to find out.

Gene and Treva are biologists who study life in caves. Their job is to explore caves located on public land in the state of Missouri. So far, they've made records of more than 225 caves. They are the first scientists in this country to write down the facts about what's inside all these caves.

Missouri has about 4,000 caves. That's believed to be more caves than any other state has. Gene and Treva's work helps the state take better care of its caves. It also helps people who like to explore caves for fun. For example, the Gardners find that some caves are dangerous. They flood quickly during storms. Other caves are ready to fall in. These dangerous caves most likely will be closed to keep people from getting hurt.

A Day in a Cave

For their trip underground, the Gardners wear coveralls, boots and helmets. At the cave opening, they begin unpacking their gear from their heavy backpacks. They strap on electric lights that are powered by batteries. "When you go caving, you have to be ready for anything," says Gene.

Gene and Treva step inside the cave. Even though



Above: Gene and Treva Gardner put on their helmets and safety lights before entering the cave.

it's not completely dark near the entrance, Gene shines his light around carefully. Once, the Gardners found they had a skunk for company in the "front room" of another cave! And they know that snakes and other animals from outside sometimes visit this area.

Treva isn't eager to repeat a scary experience they had near the front of another cave. "Once we went caving with another guy at night," says Gene. "Treva walked on alone a little ways. Then we heard her say, 'Gene, quit that.'"

EXPLORERS

Treva explains, "Gene used to make mountain lion noises." She shows how the big cats put their feet down softly. "Pfft, pfft, rrough! That's what I heard."

Only that time, the noise she heard wasn't from Gene fooling around. It was a real mountain lion. "We got out of there fast!" says Gene.

A Tight Squeeze

Soon the Gardners have to bend down to get through a low passage. The damp air smells a little like old tennis shoes. Then the cave roof gets even lower. Treva and Gene have to start crawling in the mud beside the stream.

Compared to other caves, this one isn't bad. One cave was so dusty they almost choked. In other caves, the gooey mud they crawled through was thick as chunky peanut butter.

And even worse are the pit caves the Gardners sometimes explore. There, the direction they must travel is straight down—into pits that are sometimes 80 feet deep. Only by using ropes and special mountain climbing equipment can they go down the steep sides.

After a few more turns, Gene and Treva reach a room where the cave ceiling is much higher. They're glad to be able to stand up straight. This big room seems touched by magic. Everywhere, the walls sparkle and shine. ➡➡



Above: Treva hikes up to the cave's opening. It is just one of the 450 caves that she and Gene will visit before their work is finished. The caves are often hard to reach.



Left: Gene studies a cave passageway to see where it leads. The Gardners don't use a ball of string to find their way out of caves. They make a map as they go along.

Water, of course, not magic, has changed the old gray walls. Drop by drop, year by year, the water has built lovely rock formations (see page 39). The Gardners write down descriptions of the delicate thin rocks called *soda straws*.

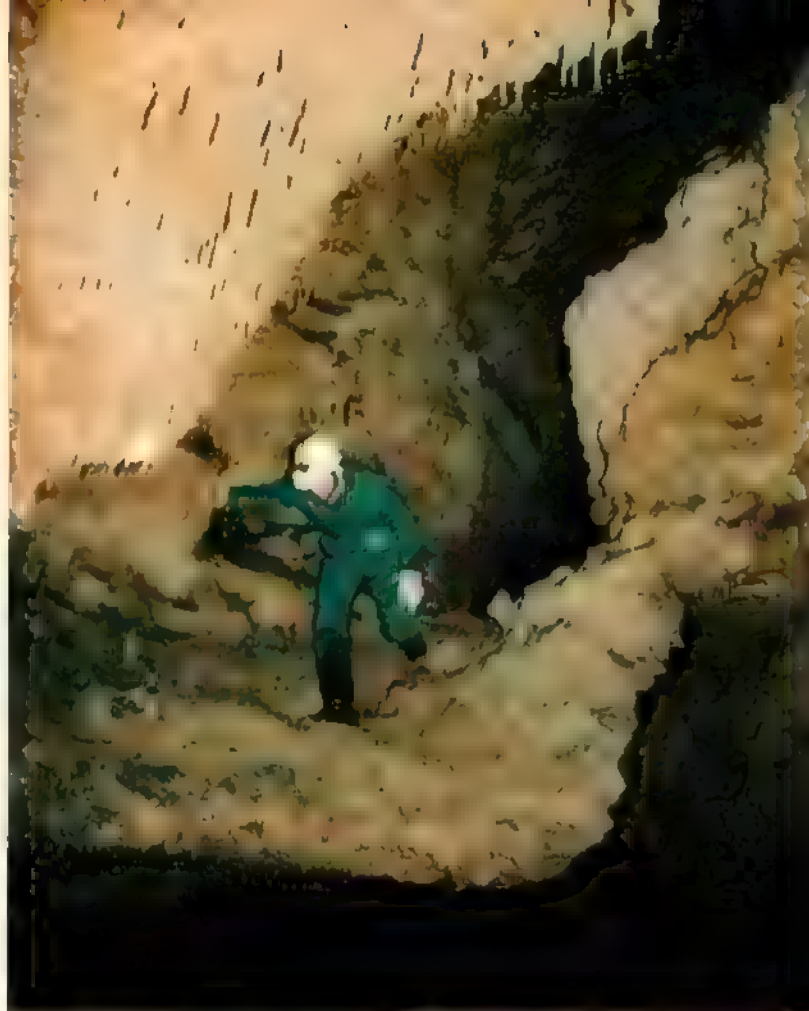
Cave Animals

The most interesting thing about caves, to Gene and Treva, are the animals that live there. Today's star attraction is a pink salamander with red gills. They snap its picture. Other animals they often meet are frogs, fish and bats.

But what the Gardners find most often in caves are little animals without backbones,

Right: Gene returns from checking an overhang which leads to another passage. Above him on the cave roof are thin rock formations called *soda straws*.

Below: Treva uses an instrument to pick up tiny animals from the cave's floor. If she picked the creatures up in her hands, she might crush them.



called invertebrates (in-VERT-uh-brates). Most of them are the size of grains of rice. So far, they have collected about 2,100 different invertebrates.

When Treva and Gene catch one of these little creatures, they take it home in a tiny bottle of alcohol. Then they try to figure out what it is. And that's not easy. At least 16 of the animals Gene and Treva have found were new ones that people had never seen before. Experts identified them as springtails because they look like other animals called springtails that live in the woods.

On today's cave trip, Gene and Treva aren't sure if they have found anything new. But they're still excited about their work in caves. They know that their scientific records may provide valuable clues about life underground for other scientists. In the future, their work may help to solve some mysteries of science. "We always gain something new from every cave," says Gene. "Each trip is an adventure in learning."

Left: The red salamander is one of the most colorful cave animals.

Do It!

Dear Hunt!

Find the 11 bear names hiding here. Look for the ones listed below in CAPITAL letters. They are hidden across, up and down and diagonally. Some are backward. Happy Hunting!

ALASKAN brown
AMERICAN black
ASIATIC black
GRIZZLY
INDIAN
KERMODE
KODIAK
MALAYAN SUN
OLD WORLD brown
POLAR
SPECTACLED

A	L	A	S	K	A	N	L	R	S	P	M
X	S	S	O	H	Y	C	A	N	D	N	A
D	O	I	M	T	L	L	A	S	E	H	D
E	K	K	A	A	Z	Y	O	J	J	X	O
L	E	A	L	T	Z	E	T	M	G	L	N
C	R	I	A	X	I	A	H	F	D	A	T
A	M	D	Y	B	R	C	U	W	C	R	O
T	O	O	A	Y	G	A	O	I	A	M	L
C	D	K	N	K	C	R	R	L	R	T	A
E	E	D	S	N	L	E	O	V	A	E	H
P	T	O	U	D	M	P	T	V	O	C	T
S	L	E	N	A	I	D	N	I	E	R	K

Puzzles

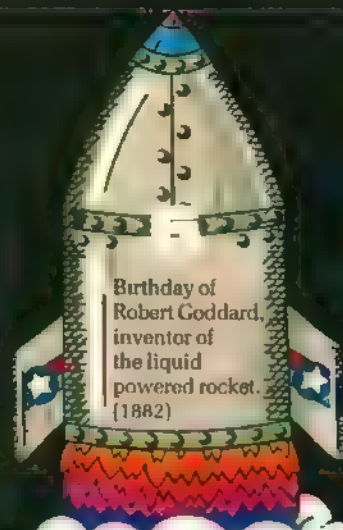
1. Change the positions of these nine pennies. They should form three rows of four pennies to a row.



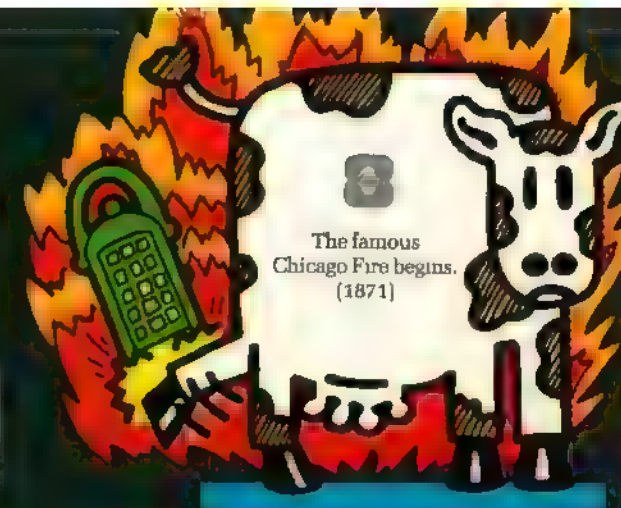
2. Draw just two straight lines to divide the horseshoe into six parts.



Answers on page 37.



Birthday of
Robert Goddard,
inventor of
the liquid
powered rocket.
(1882)

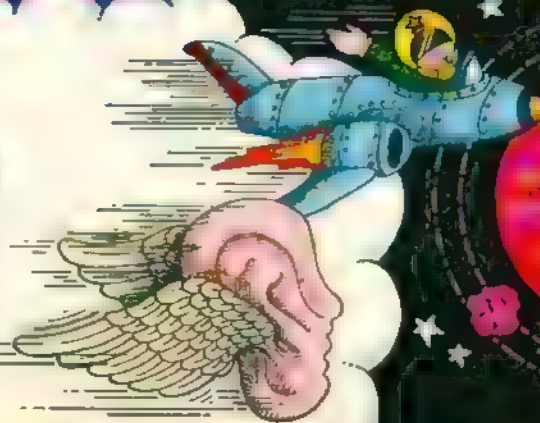


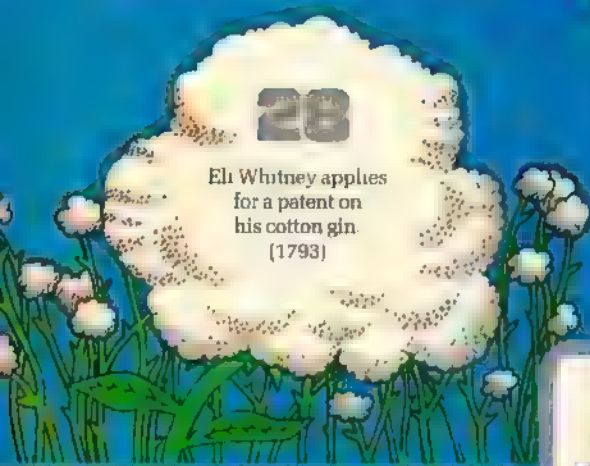
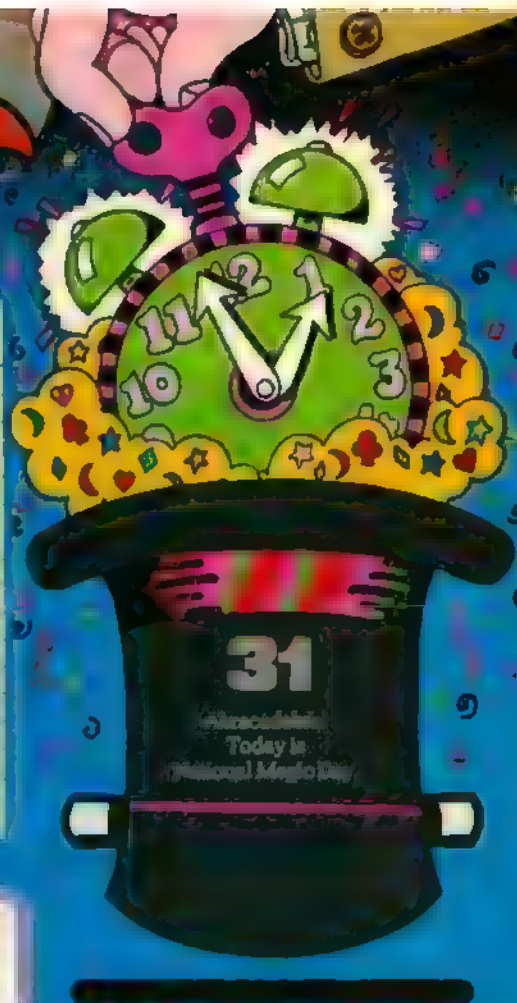
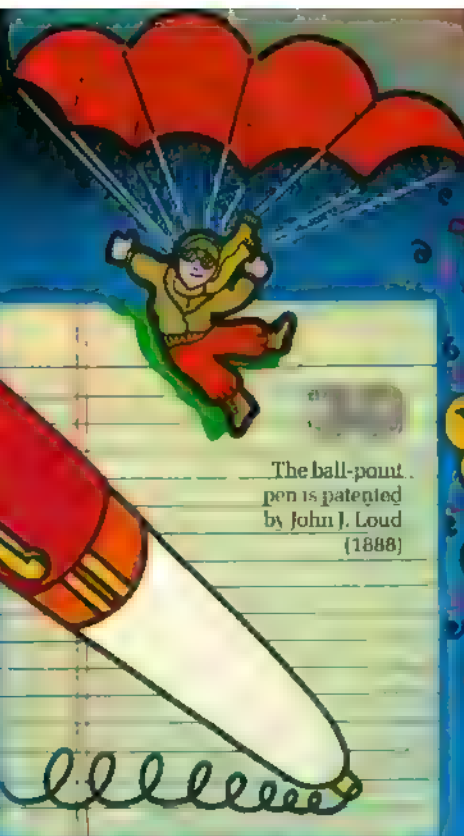
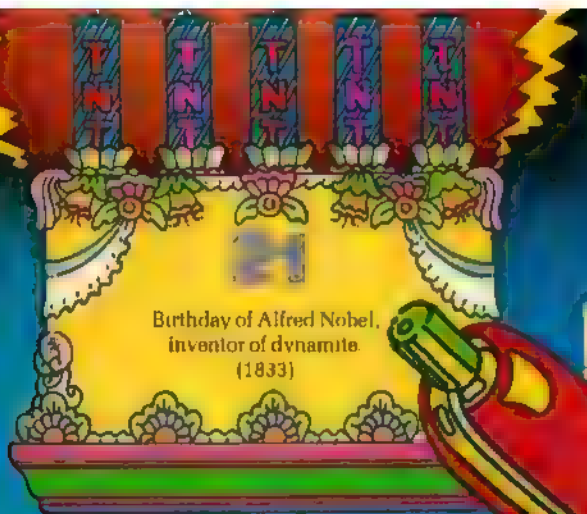
The famous
Chicago Fire begins.
(1871)



Michael Callen
eats 63 bananas
in 10 minutes
That's a world's
record. (1972)

14
Charles E. Yeager
becomes the first person
to fly faster than
the speed of sound
(1947)





	1	2	3						
4	5	6	7	8	9	10			
11	12	13	14	15	16	17			
18	19	20	21	22	23	24			
25	26	27	28	29	30	31			

Earth Days

October

Teeth

by Megan Stine & H. William Stine

Think back to when you were a little kid. How many teeth did you lose? It probably doesn't seem like it, but you had 20 baby teeth in all. There were 10 on top and 10 on the bottom. Since then you've lost a lot of them. Your adult teeth are practically all in. Count your teeth. Most kids have 28 adult teeth by the time they are 12 years old. You need 32 teeth for a full set. But those last four wisdom teeth won't come in until they're good and ready, if at all!

Say Cheeeese!

It's mirror time again, gang. Time to sit down in front of a mirror and smile. See all those pearly white teeth in there? Did you know that those teeth are the hardest things in your body? Besides that, they have blood and veins in them too! But we'll get to the gross part in a minute. First we have to start from the outside and work our way in—just like cavities!

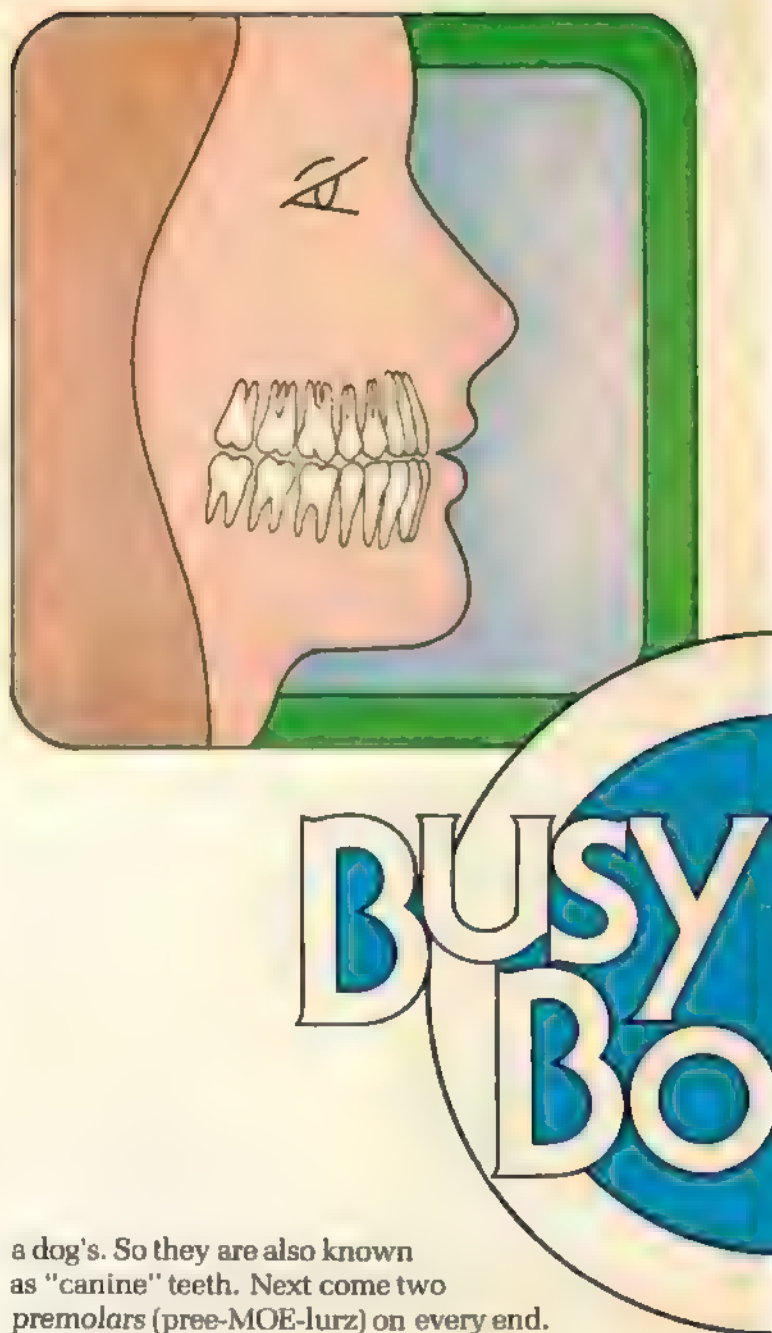
The outside layer of your tooth is made of something called enamel (ee-NAM-ull). It's harder than your bones. Enamel can't grow because it isn't really alive. Touch it and it doesn't hurt, right? That's because it's doing a good job of protecting the next layer—called dentin.

Dentin makes up the biggest part of your tooth. It's the part that hurts when the dentist drills into it. Inside the dentin is the pulp, where all the blood is! Bet you *still* can't believe you have blood in your teeth—unless you've ever broken one.

Tooth Types

All your teeth look pretty much the same. But each tooth has a particular name and job. Some people have been known to name their teeth Harry and Barbara and Roscoe. Although this is friendly, it can get very confusing.

Open up and say AHHHHHH! Wider please. Good. Now count along. Your front teeth on top and the four on the bottom are called incisors (in-SIZE-ors). Behind them are the cuspids (KUSS-pids), one on each end. These teeth are pointy like



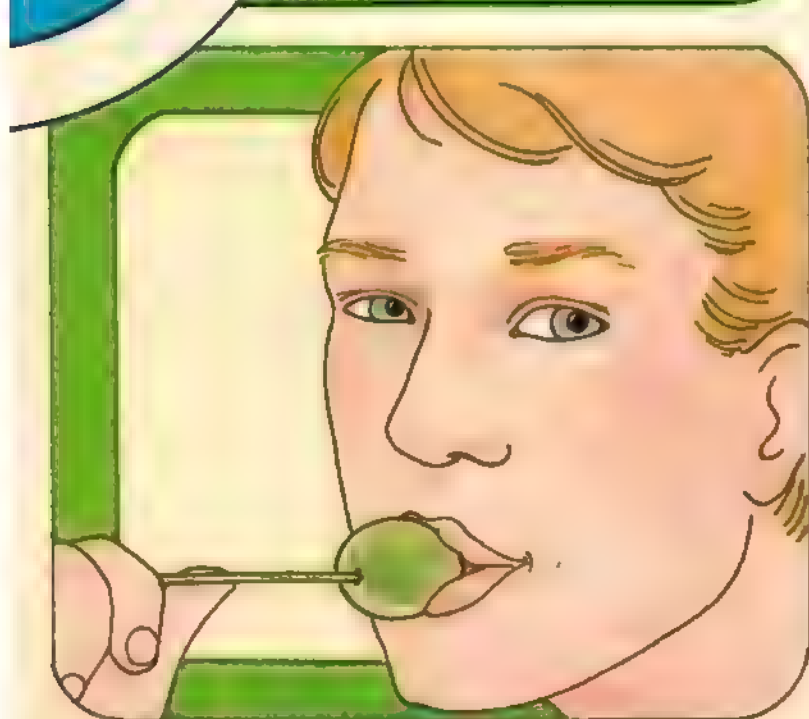
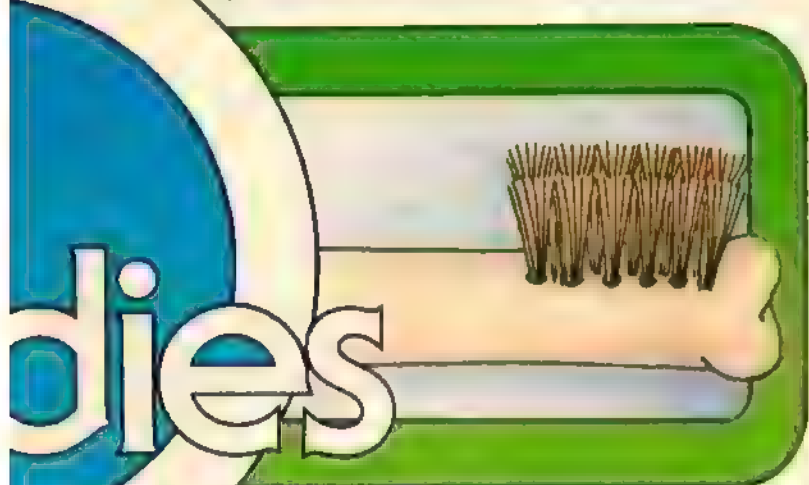
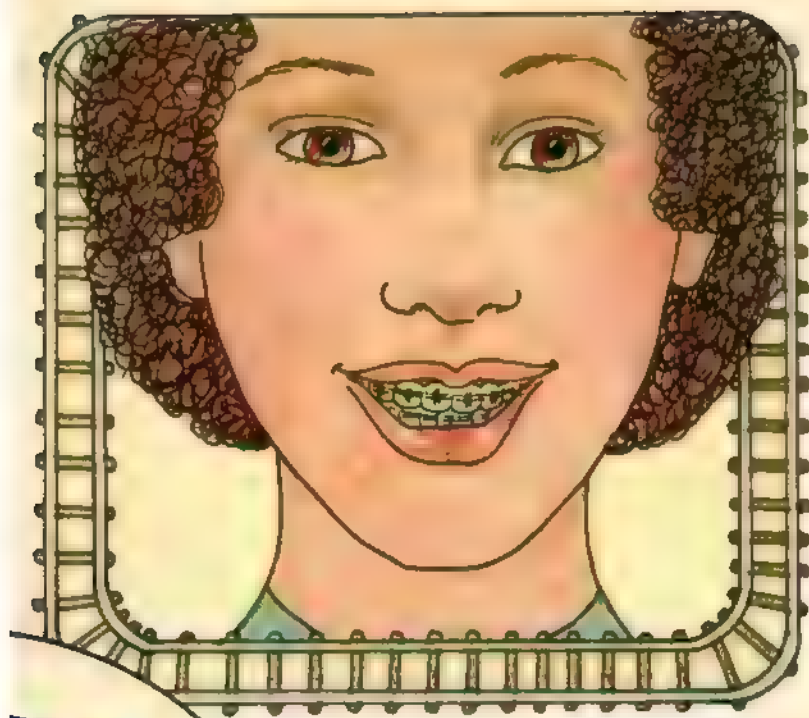
a dog's. So they are also known as "canine" teeth. Next come two premolars (pree-MOE-lurz) on every end. Finally, all the way in the back, there are your molars.

You use your incisors and cuspids for biting and grasping food. Your premolars and molars are for chewing up things. Try this for a change. Chew a piece of gum using just your front teeth. Or try to eat an apple using only your molars. Weird, huh?

Brace Yourself, Gang

What do metal-mouthed, braces-wearing kids have in common with Diana Ross, Michael Jackson, Dickie Smothers and Phyllis Diller? Their braces, of course!

The real surprise is that these famous people wore braces after they had grown up. So if you've got a mouthful of "railroad tracks," don't worry. You're in pretty cool company.



Someday only you and your doctor will know if you are wearing braces. It sounds too good to be true, but one new kind of braces is almost invisible. These are made like old-fashioned braces. But instead of metal, they are made of plastic the same color as teeth. Get it? They are there, but people can hardly see them.

Even better is another new kind of braces. These are attached to the backs of your teeth. You can feel them with your tongue. But no one can see them when you smile.

These new kinds of braces sound like an out-of-sight idea. But they are still being developed. In the meantime, most kids will have to stick to the old kind. Sorry guys!

Crime Pays!

William Addis was thrown in jail in 1770. One morning, he sat in his cell cleaning his teeth with an old rag. William wasn't weird or anything. Back then, that's the way people cleaned their teeth.

Before long, William got a brainstorm. He took an old bone from his supper and bored tiny holes in it. Then he got some bristles. He glued a clump of them into each hole. That's right, dental fans. William Addis invented the world's first toothbrush.

When he got out of jail, Addis went into the toothbrush-making business. And, so the story goes, he lived happily ever after.

Don't Be a Sucker

Yes, chewing gum can cause cavities! But sucking on hard candies is even worse.

Your teeth are covered with plaque (PLACK). This is a thin, sticky layer of germs. (In fact, dentists say that human mouths are the dirtiest of all. So go kiss your dog!) When plaque mixes with sugar, it forms acid. It's this acid that eats into your teeth, making cavities. The longer sugar stays in your mouth, the more acid it produces. So even though chewing gum is bad, most of the sugar gets chewed out pretty fast. You're only left with the gum in your mouth. Hard candies take longer to melt away. Meanwhile, acid starts drilling into your teeth. You know who has to drill after that! So give germs the brush-off after every meal.

Experiment: The Shell Game

Want to see how cavities form, without ending up in the dentist's office? Try this experiment. Put a piece of egg shell in a cup of vinegar. Stick another piece in a glass of water. Let them sit for a few days. You will find that the shell in water stays the same. But the one in vinegar gets soft, rubbery and weak.

What does this have to do with cavities? More than you might think. Vinegar is an acid, like the stuff that forms in your mouth. Egg shells are made of calcium (KAL-see-um). This is the same thing that makes your teeth hard. Acid eats away at the calcium in the egg shell and makes it weaker. The same kind of thing happens in your mouth when you get a cavity.

There is also a great trick to try with a hard boiled egg and a cup of vinegar. After the egg has soaked for a few days, you should be able to bounce it! This gets good laughs with very nervous adults who think they're about to have a floor full of raw egg to clean up.

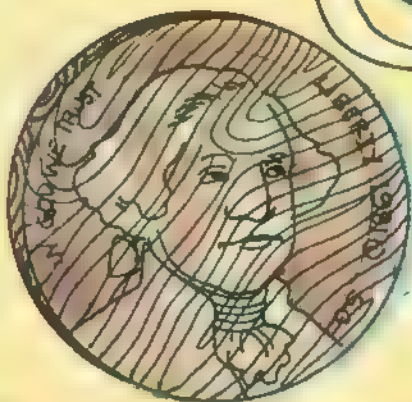
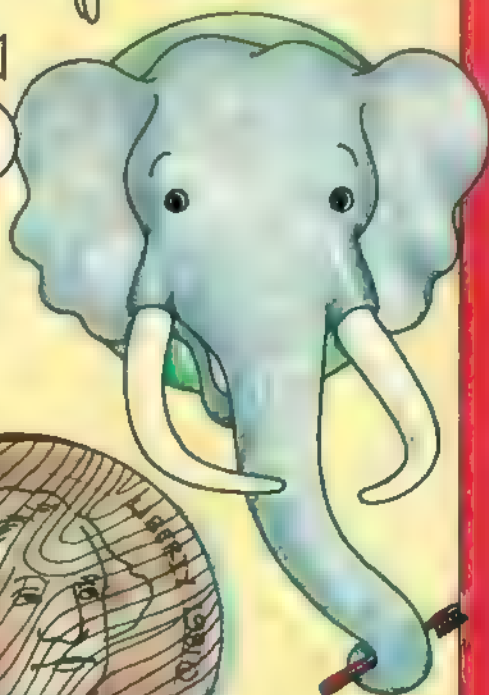
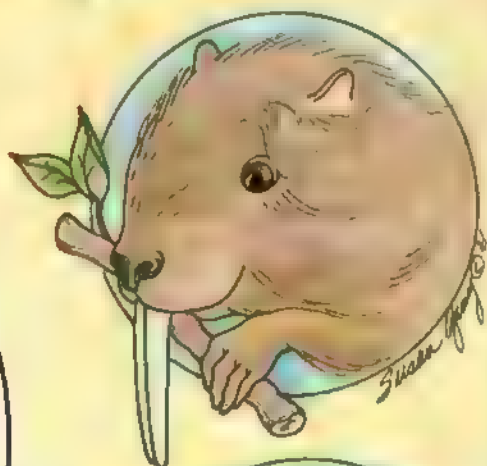
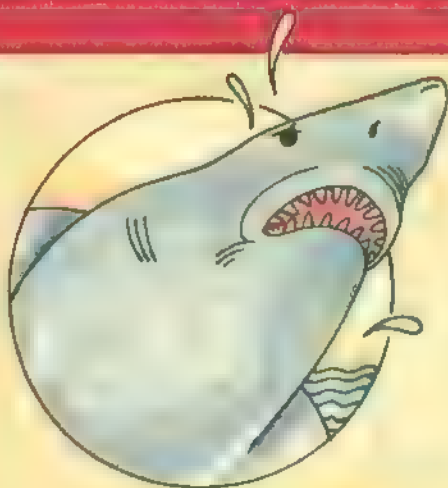
Why Fillings Are Huge

When you look in the mirror you can't ever see your cavities. But when you get to the dentist, she drills a hole that seems as big as the Grand Canyon! Why? Two reasons. One is to make sure there's no tooth decay left. If germs are left they can keep eating your tooth even with the filling on top. The second reason is also the answer to:

Why Fillings Don't Fall Out

They don't fall out because the dentist drills a hole shaped like an upside-down "V." The top is narrow, the bottom is wide. (In your top teeth the "V" is right-side up.) When the silver or plastic filling hardens into a V shape, the fat part won't fit through the skinny neck. And that's why fillings don't fall out.





dies

Mouthing Off

Teeth are for more than eating. Teeth are for talking, too. Try saying anything—for instance, the word “anything”—without letting your tongue touch your teeth. Now try saying “toothbrush.” Now try “I’m not talking to myself. I’m just doing an experiment with my teeth.” Now look embarrassed. After all, you were talking to yourself and you know it.

A Few Fast Fun Facts About Teeth

- Just our luck, sharks’ teeth grow back no matter how many times they lose them.

- Beavers’ teeth never stop growing. By chewing wood, beavers can keep their teeth down to size. And speaking of size, huge elephant tusks are really elephant teeth. They never stop growing, either.

- Some peoples’ fillings in their teeth act like a radio antenna and these people pick up radio signals in their heads. No kidding!

- Some people have a supernumerary. That’s an extra tooth somewhere in their mouths. You probably need extra teeth just to pronounce that mouthful!

- John Massis of Belgium pulled two railway cars with his teeth. The next challenge for the world’s strongest teeth may be chewing through school cafeteria food!

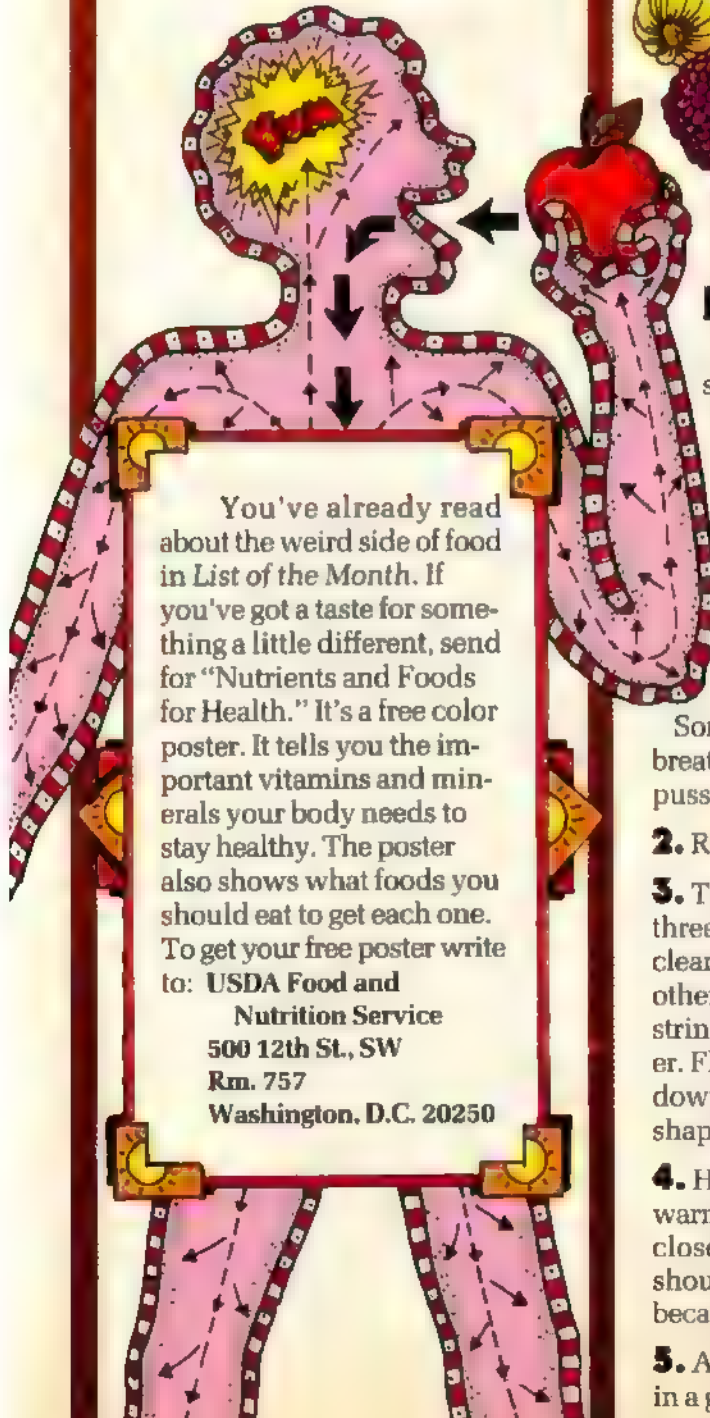
And Don’t Take Any Wooden Nickels Either

Everyone knows about George Washington and his famous wooden false teeth. They didn’t fit right, they didn’t look right and they didn’t work right. So George had a set of false teeth made out of old human teeth and elk teeth. Yuk and double yuk.

If George Washington were alive today he could get false teeth made out of plastic. Or he could get them made out of porcelain (POR-sel-en) which is the same stuff they use to make kitchen sinks . . . Uh-oh—Yuk again!

Here are some books to read and things to do and see after reading this issue of 3-2-1 CONTACT.

Free Food Poster



You've already read about the weird side of food in *List of the Month*. If you've got a taste for something a little different, send for "Nutrients and Foods for Health." It's a free color poster. It tells you the important vitamins and minerals your body needs to stay healthy. The poster also shows what foods you should eat to get each one. To get your free poster write to: USDA Food and Nutrition Service
500 12th St., SW
Rm. 757
Washington, D.C. 20250



Dried Flowers

Want to keep a little bit of summer with you all winter long? You can, by drying summer flowers. You need flowers, a hanger, long pipe cleaners or string and a glass jar.

What to Do

1. Pick flowers you like. Make sure they're not wet. Some good flowers are baby's breath, butterfly weed, heather, pussy willow and yarrow.
2. Remove leaves from stems.
3. Tie flowers in bunches of three with one end of a pipe cleaner or string. Attach the other end of the pipe cleaner or string to the bottom of the hanger. Flowers should hang upside down because they keep their shape better.
4. Hang your flowers in a warm, dry, dark place, like a closet. In three weeks they should be dry. You can tell because the stems will be stiff.
5. Arrange your dried flowers in a glass jar.

Morris Museum

This review was sent in by Chris Burns, Basking Ridge, NJ.

I went to the Morris Museum of Arts and Sciences in Morristown, NJ. For a small city it has a big museum.

The most popular room is the electronic room. It shows the nature of sound by springs, and it shows the history of the phone. There is also a room on Indians and fossils.

If you want to spend a day there, there is a park to eat lunch.

Have you visited a museum lately? If so, why not write a 100-word review for CONTACT. If we use yours, you'll get a CONTACT T-shirt. Send your review, name, address and T-shirt size to:

3-2-1 CONTACT
Museum Review
P.O. Box 599
Ridgefield, NJ 07657



The Bear Facts

You read about one kind of bear, the black bear, on page 4. There are six other types. If you'd like to find out about them, look for these books at libraries or bookstores:

Previews

Bears The largest bears can be 9 feet long and weigh well over 1,000 pounds. Luckily, most of these giant beasts don't go out of their way to harm people. In this book, Bernard Stonehouse explores the lives of the world's many kinds of bears. You'll meet familiar ones like the polar bear and grizzly, plus strange bears like the Indian sloth bear and the sun bear. This book is published by Raintree.

Bears of the World Dorothy Hinshaw Patent's book tells you about the lives of bears, and much more. You'll find out why it is getting



Bears In this book by Henry Pluckrose you not only can read about bears—you can look at some really great drawings of them, too. You can compare the size, shape and color of the seven types of bears. There's also a map showing the places in the world where different kinds of bears are found. *Bears* is published by Franklin Watts.



A Country of Caves

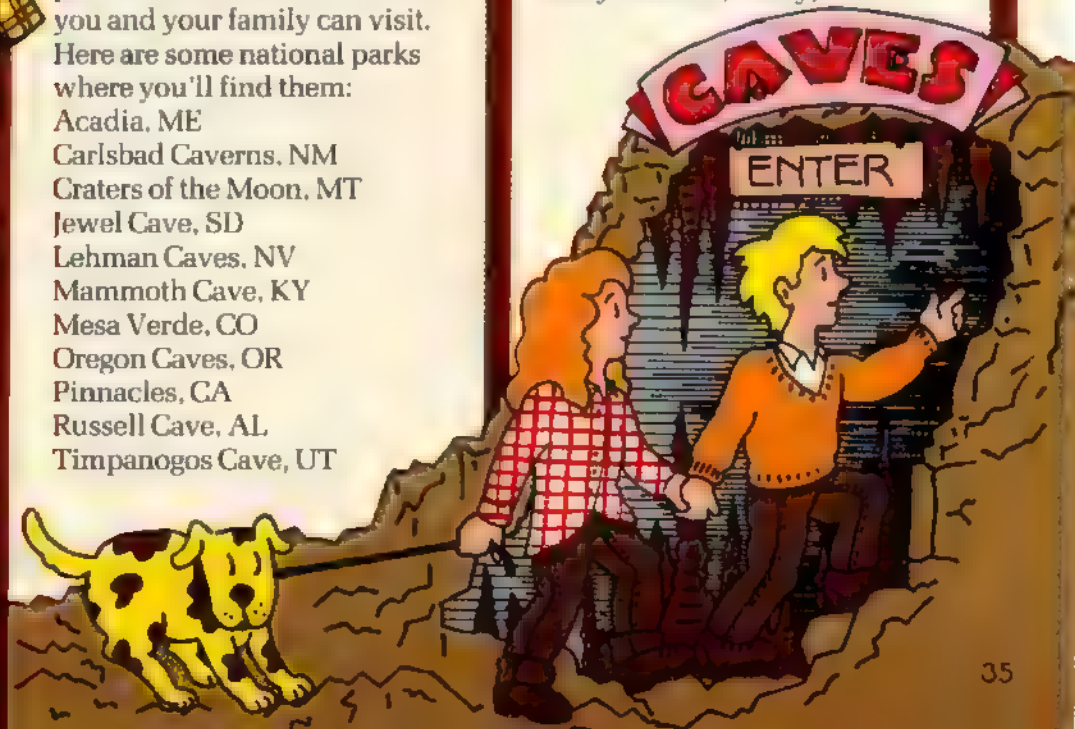
After reading about two cave explorers, maybe you would like to see a cave yourself. Never enter an unknown cave alone, but there are hundreds of safe public caves across the U.S. that you and your family can visit.

Here are some national parks where you'll find them:

Acadia, ME
Carlsbad Caverns, NM
Craters of the Moon, MT
Jewel Cave, SD
Lehman Caves, NV
Mammoth Cave, KY
Mesa Verde, CO
Oregon Caves, OR
Pinnacles, CA
Russell Cave, AL
Timpanogos Cave, UT

Other places to try are:

Florida Caverns, Marianna, FL
Crystal Cave, Dubuque, IA
Niagara Cave, Harmony, MN
Lost River Caverns,
N. Woodstock, NH
Howe Caverns, Howes Cave, N
Linville Caverns, Ashford, NC
Luray Caverns, Luray, VA



Experiment

Seeing Sound

In *Any Questions?* you found out that sound travels in invisible waves. Here's how to make a gadget that can help you "see" these waves.

What You Need

- | | |
|---------------------------|--------------|
| a clean, empty soup can | a can opener |
| a balloon | a radio |
| a rubber band | scissors |
| 6 grains of uncooked rice | |

What You Do

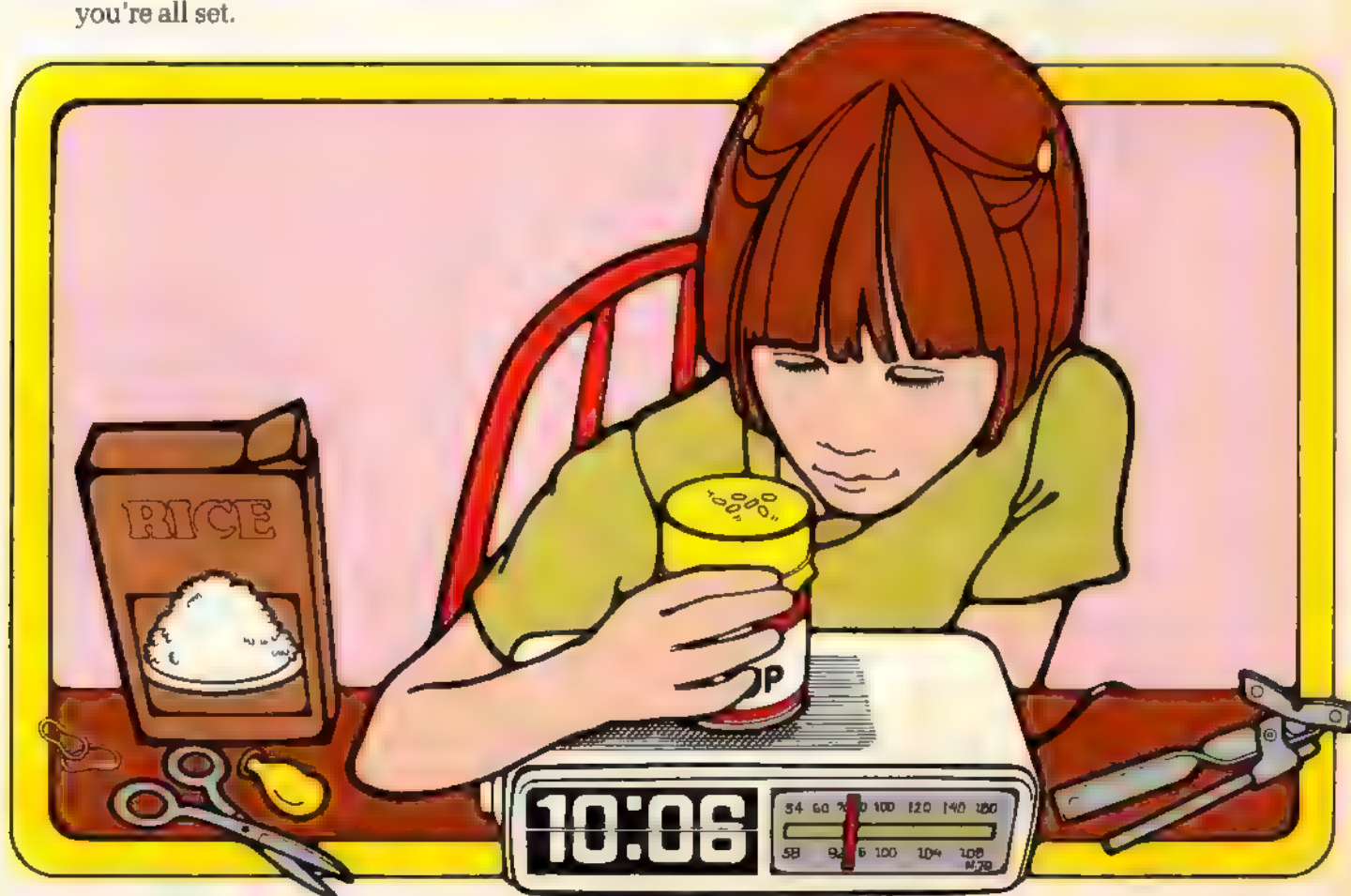
1. Use your can opener to remove the top and bottom lids of the can. *Be careful!* Make sure there are no sharp edges left.
2. Stretch the balloon over one end of the can. If you cut off the end of the balloon first, it fits over the can more easily.
3. Put the rubber band over the end of the can to hold the balloon in place.
4. Place the rice on the balloon's surface. Now you're all set.

5. Hold the can over a radio speaker. Turn up the volume of the radio. Watch what happens to the rice.
6. Experiment with other sounds to see what happens. For example, have your friend shout or clap her hands below the can.

Why It Works

Sound waves are really vibrations that travel through the air. The vibrations from your radio speakers made the particles of air around the speakers vibrate, too. These particles moved forward and bumped into other air particles. Those bumped into still more, and so on. This is how a sound wave moves through the air.

When the sound wave from your radio speaker reached the balloon's surface, the moving air particles bumped into it. The balloon's surface began to vibrate and that made the rice move.



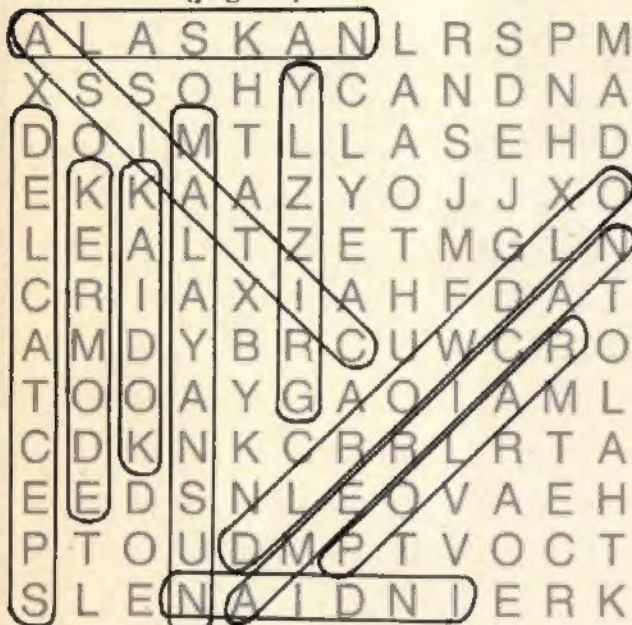
Did It!

Answers

Pig Puzzle (page 17)

BACON	HOG	PIG	PIGSTY	SNORT
FARM	MUD	PIGLET	PINK	SNOUT
HAM	OINK	PIGPEN	PORK	TAIL

Dear Hunt (page 27)



Thank You! To the principal, the science teacher, and all the students and classroom teachers at P.S. 59 in New York for all their help in reviewing articles in 3-2-1 Contact.

To Patricia Stubis, whose book "Sandwichery" provided some ideas for the List of the Month. The book is published by Scholastic.

OOPS! In our May 1981 issue, we told you that some digestion takes place in the liver. We goofed! What really happens is that some chemicals for the liver enter the small intestine to help with digestion.

In the June 1981 Earth Days we told you that *California Electric*, the first power company to sell electricity, was established on June 31, 1879. The date should be June 30, 1879. Thanks to Richie Rogers of Annandale, VA, and David Lang of Baltimore, MD, for catching our mistake.

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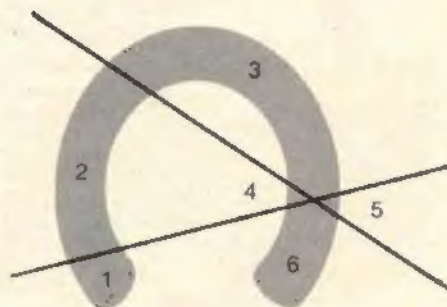
Puzzles

(page 27)

1. There are a few ways to solve this puzzle. Here is just one.



2.



Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

Bloodhound Gang

Read part two of the mysterious "Case of the Golden Lining."

Poster!

A colorful picture to hang on your wall.

Halloween Quiz

Find out how much you know about this spooky holiday.

Plus Factoids, Puzzles, Earth Works and Much More!

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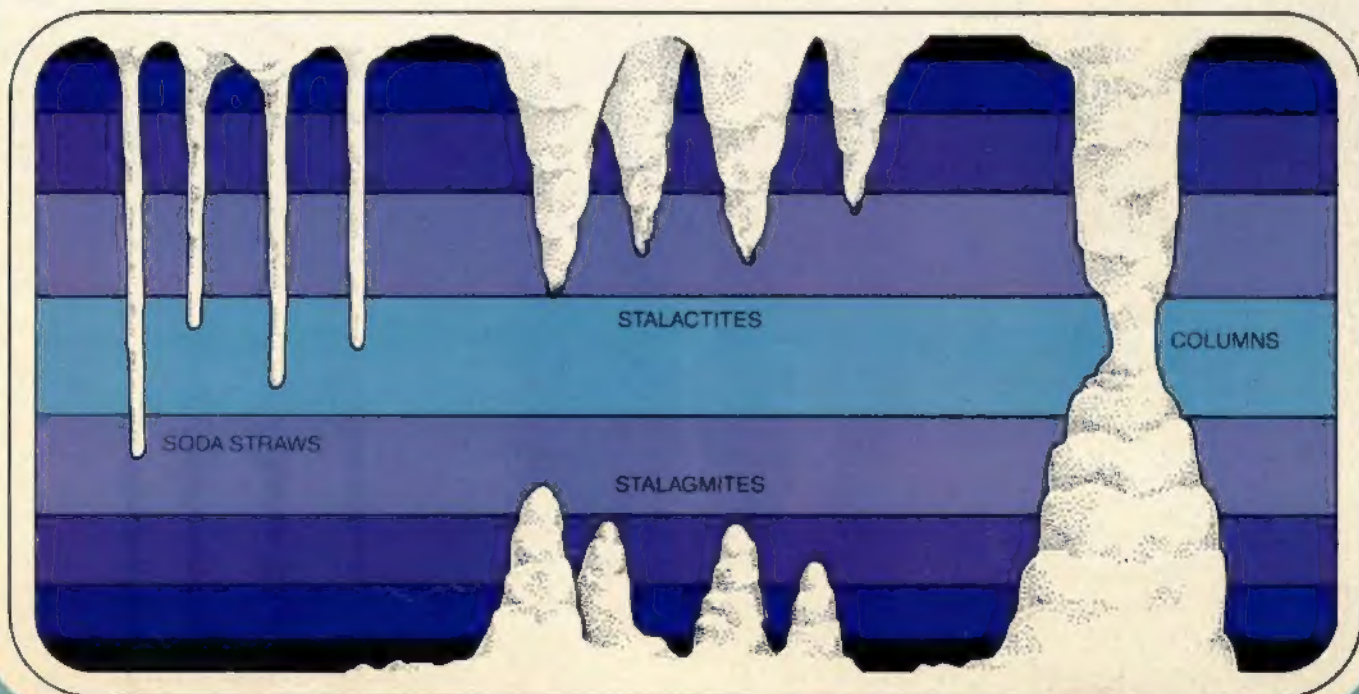
Earthfacts: Caves

Each month CONTACT will bring you another Earth Works. Save these pages in a notebook. Soon you will have your own guide to the wonders of the planet earth.

EarthWorks

- Like most caves, Carlsbad Caverns is made of rock called *limestone*. This rock was formed millions of years ago from the bones and shells of dead sea animals which settled on the ocean floor.
- Later, the ocean drained away in some places. As the surface of the earth shifted, the limestone cracked. Then water began seeping down into the cracks. Water picks up a gas from the air and soil and forms an acid. This acid slowly wears away the limestone. A cave is what's left after a lot of rock has dissolved. A large cave is called a *cavern*.
- Water also leaves minerals behind when it wears away the limestone. These minerals create the unusual rock formations that you see in caves. They look like icicles except that some are orange and pink.
- Scientists study caves to learn about the earth's history (see page 24). Caves supply clues about the earth's age and what it was like long ago. Sometimes, fossils of ancient plants and animals are found in cave walls.
- Cave exploring is a popular sport. People who do it are called spelunkers (spi-LUNK-ers). George Washington and Thomas Jefferson were early spelunkers. Washington made a carving on a cave wall in Virginia.
- There are more than 500,000 caves in the world. At least 30,000 are in the United States. More are discovered each year. Many American caves are found in a cave belt which runs across the states of West Virginia, Kentucky and Missouri. Texas also has many caves.
- People have lived in caves for a long time. Human remains that are thought to be 500,000 years old were found in a Chinese cave. And people still live in a cave in the Middle East that first housed humans 100,000 years ago!

Below: *Stalactites* (sta-LAK-tights) are the formations that hang down from the ceiling. Those that grow from the cave floor are called *stalagmites* (sta-LAG-mites). Sometimes these two formations grow together to form *columns*. *Soda straws* are thin, hollow rock tubes. Often water runs through their centers.



Unusual rock formations in caves are made from limestone.

Focus on Caves

by Barbara Seuling

A young cowboy rode along in the New Mexico Desert about 70 years ago. Suddenly, he saw a column of smoke rising in the evening sky. Was it a fire? A tornado? Curious, he followed it. The "smoke" turned out to be millions of bats coming out of a hole in the ground. The cowboy, making a rope ladder from his lasso, climbed down into the hole. He was in an enormous cave. By accident, he had discovered Carlsbad

Caverns, one of the world's largest caves.

Today, thousands of people go to see Carlsbad Caverns each year. One of the attractions is a huge room 4,000 feet long called—guess what?—the Big Room. There are also rock pictures painted long ago by Indians. The cave even has areas that have not yet been explored. Who knows what new wonders are still to be found?

(continued on page 39)